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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/474,299 | 12/29/1999 | MARCEL F.C. SCHEMMANN | PHA-23.939 | 2088 |

22850 7590 05/31/2006

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| EXAMINER | |
|---|---|
| KIM, DAVID S | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2613 | |

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/474,299 | SCHEMMANN ET AL. | |
| | Examiner | Art Unit | |
| | David S. Kim | 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *34-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *34-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

1. Applicant's compliance with the objections to the drawings in the previous Office Action (mailed on 03 February 2006) is noted and appreciated. Replacement sheet drawings of Figs. 5 and 7 were received on 21 February 2006. These drawings are approved.

### *Specification*

2. Applicant filed proposed amendments to the specification on 03 February 2006. With the filing of the RCE on 21 February 2006, Applicant's proposed amendments were entered. As similarly noted in the previous Advisory Action (mailed on 03 February 2006), Applicant's amendments to the specification overcome the previous objections.

### *Claim Objections*

3. **Claims 34 and 36-39** are objected to because of the following informalities:

**In claims 34 and 38**, "a plurality of ***upstream*** output ports" is used where -- a plurality of ***downstream*** output ports -- may be intended (emphasis Examiner's). That is, in Fig. 11, "a plurality of upstream output ports" corresponds to the port to 802 from 792. However, Examiner wonders if Applicant intended to mean -- a plurality of ***downstream*** output ports --, which may correspond to port 804 from 791.

**In claims 34 and 38-39**, "bidirectional downstream input/output ports" is used where simply -- bidirectional input/output ports -- may be intended. That is, downstream indicates unidirectional ports in contrast to the "bidirectional" limitation.

**In claims 36-37**, "analog ***upstream*** output port" is used where -- analog ***downstream*** output port -- may be intended (emphasis Examiner's). That is, in Fig. 11, "analog upstream output port" does not correspond to any port. However, Examiner wonders if Applicant intended to mean -- analog ***downstream*** output port --, which may correspond to port 807 from 791.

Appropriate correction is required.

## *Claim Rejections - 35 USC § 112*

4. Applicant's response to the rejection of claims 28-33 under 35 USC 112 in a previous Office Action (mailed on 18 October 2005) is noted and appreciated. Claims 28-33 have been cancelled. Accordingly, the previous rejection of claims 28-33 under 35 USC 112 is moot.

## *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 34-36 and 39-41** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright (U.S. Patent No. 5,841,468) in view of BuAbbud (U.S. Patent No. 6,460,182 B1) and Marin et al. (U.S. Patent No. 6,501,768 B2, hereinafter "Marin").

**Regarding claim 34**, Wright discloses an apparatus (Fig. 1) comprising the plurality of various upstream input and output ports (ports along lines 30 for upstream transmissions in Fig. 1), the plurality of hub conversion modules (DH 14 in Fig. 1), each hub conversion module connected to one of the upstream input ports (input port to DH 14 from line 30), each hub conversion module comprising:

the receiver configured to convert a carrier signal modulated on an optical input signal to an electrical signal (e.g., receiver 52 in Fig. 2B or 4, col. 8, l. 39-41),

the frequency converter connected to an output of said receiver configured to convert said frequency of said electrical signal (e.g., frequency converters 70 or 48 in Fig. 2B or 4), and

the transmitter connected to an output of said frequency converter and configured to convert said electrical signal to a carrier signal modulated on an optical output signal (e.g., transmitter 50 in Fig. 2B or 4, col. 8, l. 39-41).

Wright does not expressly disclose:

the plurality of ***bidirectional input/output ports***; and

the ***controller*** connected to each of said hub conversion modules and configured to control frequency conversion of said electrical signal.

Rather, Wright discloses separate unidirectional input and output ports (e.g., input and output ports to the DH from the headend in Fig. 1). However, ***bidirectional input/output ports*** are well known in the art. For example, notice the bidirectional port in Fig. 2 of BuAbbud (e.g., the port into 18 to/from 10). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to employ bidirectional input/output ports instead of the separate unidirectional input and output ports of Wright. One of ordinary skill in the art would have been motivated to do this since it is conventionally known that doing so is part of a common technique for providing bidirectional transmissions and common benefits thereof: reduced need for fiber transmission lines and/or increased utilization of existing fiber transmission lines.

Wright in view of BuAbbud does not expressly disclose:

the ***controller*** connected to each of said hub conversion modules and configured to control frequency conversion of said electrical signal.

Rather, Wright is silent about such a controller. However, controllers are known to be common components in apparatuses such as the conversion modules of Wright (DH 14 in Fig. 1). For example, notice the controller(s) (Marin, e.g., 58, 60, or 62 in Fig. 2) in the conversion module of Marin (26 in Fig. 2). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to

incorporate a controller(s) in the conversion modules of Wright. One of ordinary skill in the art would have been motivated to do this since it is generally recognized that conversion modules (e.g., Wright, DH 14 in Fig. 1) are often complex apparatuses that require proper control and coordination of their functions. For example, Marin's unit 58 provides reference signals for proper frequency conversion (Marin, col. 5, l. 7-10). Marin's unit 60 acts as a central control computer that collects alarm information and provides a collection point of the control and communications away from the conversion module (Marin, col. 5, l. 21-26), offering proper coordination of frequency conversion. Marin's unit 62 provides power for the conversion module (Marin, col. 5, l. 29-33), controlling whether or not frequency conversion can even occur.

**Regarding claim 35**, Wright in view of BuAbbud and Marin discloses:

One hub conversion module (e.g., Wright, DH14 on the left of Fig. 1) having the first frequency converter (e.g., Wright, one of the up-converters or one of the down-converters in Fig. 2B or 4); and

a second hub conversion module (e.g., Wright, DH14 on the right of Fig. 1) having the second frequency converter (e.g., Wright, another one of the up-converters or another one of the down-converters in Fig. 2B or 4);

wherein the first converted frequency is different from the second converted frequency (e.g., Wright, any suitable selection of up-converter(s) or down-converter(s) so that the converted frequencies are different).

**Regarding claim 36**, Wright in view of BuAbbud and Marin discloses the various analog ports (e.g., Wright, col. 6, l. 58-62; col. 7, l. 5-11, 30-32, 38-42, 56-62).

**Regarding claims 39 and 41**, claims 39 and 41 are method claims that introduce limitations that correspond to the limitations introduced by apparatus claims 34 and 35, respectively. Therefore, the recited means in apparatus claims 34-35 read on the corresponding steps in method claims 39 and 41.

**Regarding claim 40**, Wright in view of BuAbbud and Marin disclose wherein said optical input signal and said optical output signal contain the same information content (e.g., Wright, the same return "data message" is maintained as it progresses upstream from a subscriber to the headend, col. 3, l. 17-22).

8. **Claims 37 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wright in view of BuAbbud and Marin as applied to claims 34 and 36 above, with reference to Suzuki (U.S. Patent No. 5,790,170).

**Regarding claim 37**, Wright in view of BuAbbud and Marin does not expressly disclose wherein various analog ports carry analog optical signals. Rather, notice that Wright employs the terms "broadcast" and "data" signals (Wright, e.g., col. 1-2; col. 3, l. 36-39). Suzuki shows that "broadcast" signals are usually analog (Suzuki, analog signals on left side of Fig. 1, col. 1, l. 13, 53-56). In Wright, notice that input(s) to upper left receiver(s) 52 in Figs. 2A-4 carry optical broadcast signals, which Suzuki shows to be conventionally analog.

**Regarding claim 38**, Wright in view of BuAbbud and Marin does not expressly disclose wherein the various upstream ports and the bidirectional input/output ports are carry digital optical signals. Rather, notice that Wright employs the terms "broadcast" and "data" signals (Wright, e.g., col. 1-2; col. 3, l. 36-39). Suzuki shows that "data" signals are usually digital (Suzuki, digital signals in Fig. 1, col. 5, l. 24-25; col. 6, l. 19; col. 7, l. 10, 42-44; col. 8, l. 13-15, 50-56). In Wright, notice that upstream paths carry optical data signals (Wright, col. 3, l. 48-54; col. 4, l. 17-22), which Suzuki shows to be conventionally digital.

## ***Response to Arguments***

9. Applicant's arguments (filed on 18 January 2006, entered with RCE of 21 February 2006) with respect to new claims 34-41 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments were against Sasayama et al. (U.S. Patent No. 5,506,712). Note that Sasayama et al. has not been applied to address new claims 34-41. Rather, these new claims are addressed under Wright as the primary reference in new ground(s) of rejection under 35 USC 103.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER

Approved by DSK
16 MAY 2006





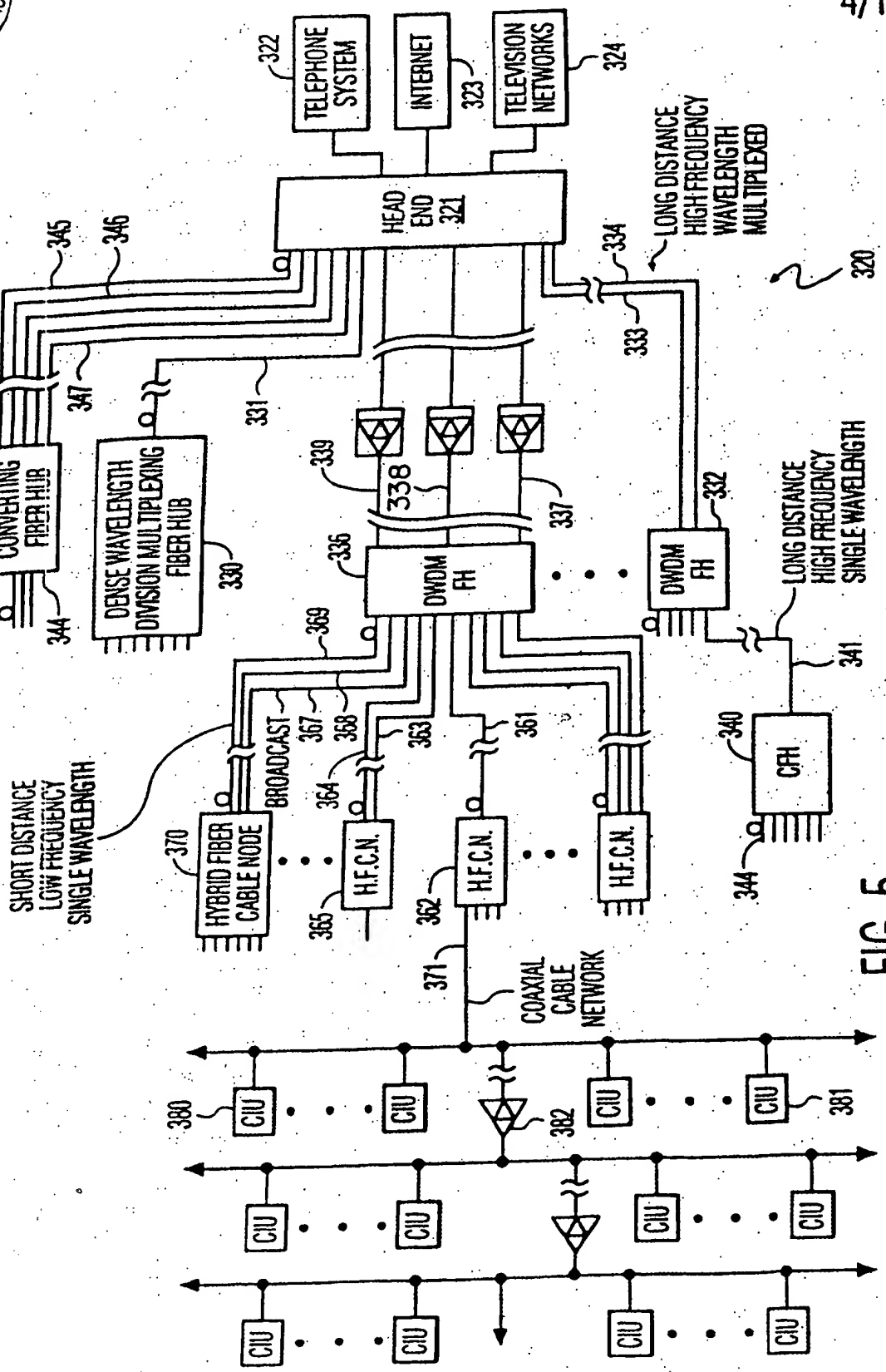


FIG. 5

Approved by DSK
16 MAY 2006





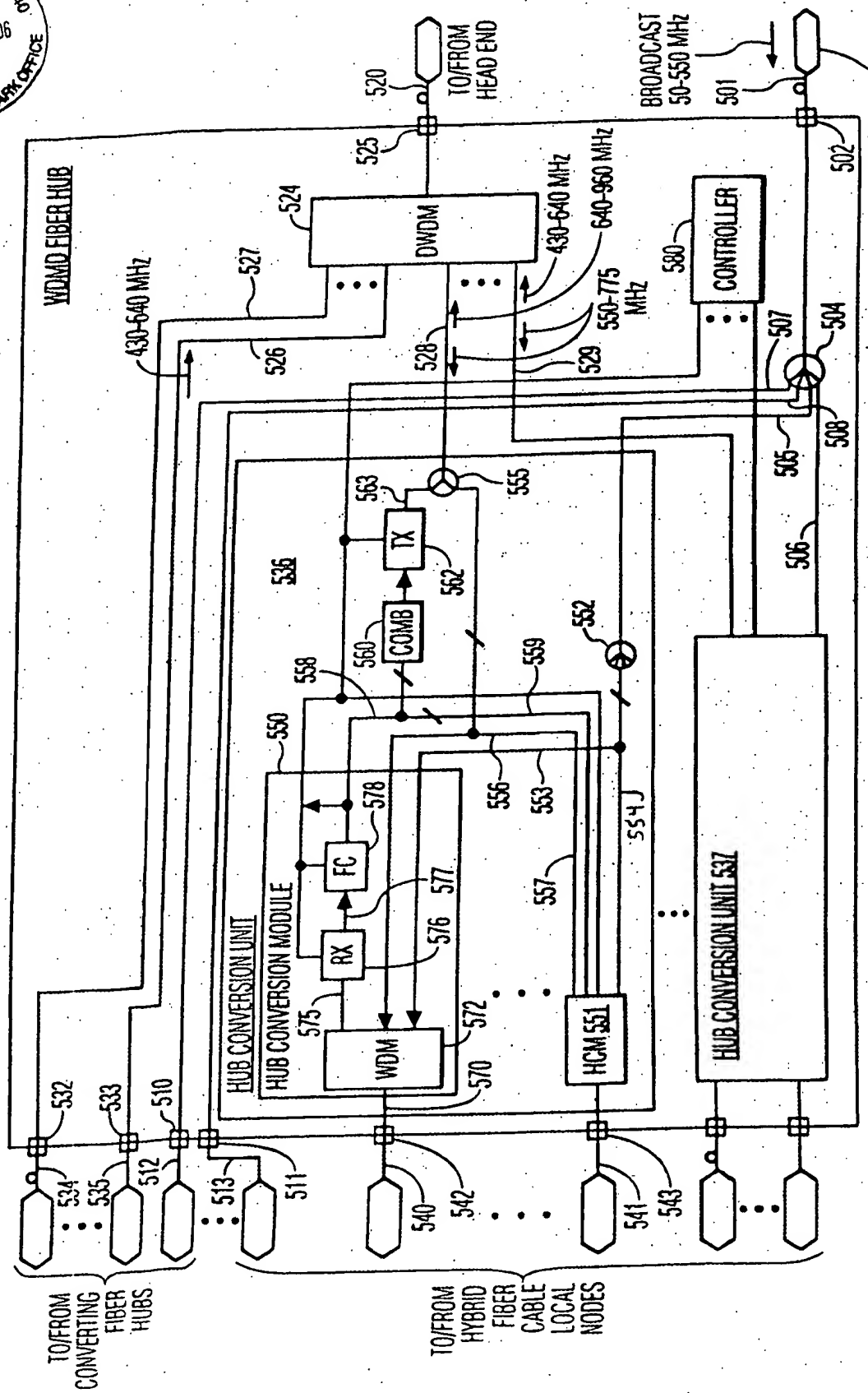


FIG. 7